

**REMARKS**

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-16, 18-39, and 41-49 are in this Application. Claims 1-16, 18-39, and 41-49 have been rejected under 35 U.S.C. § 103. Claims 1 and 23 have been amended herewith. New claims 50 and 51 are added.

**Claim Objections**

The "a" before "an absolute length" in claim 1 has been removed.

**35 U.S.C. § 112 Rejections**

Examiner rejected claims 1-16, 18-22, 46, 47 and 49 under 35 U.S.C. § 112. Examiner says that claim 1 is unclear as it is not clear what the role of the anatomical structure is in the images. The claim has been amended to specify that the anatomical structure is imaged, that the image is a direct image of the anatomical structure and that it is the direct image of the anatomical structure that is segmented and rearranged. Claim 1 and its dependencies are now believed to be allowable in this respect.

Claims 1 – 16, 18 – 39 and 41 – 49 are rejected over the combination of Krause and Kennet.

The present embodiments relate to direct use of the imaged anatomical structure in planning and simulation of an orthopedic procedure.

The independent claims have been amended to explicitly relate that the rearrangement is carried out using the medical images taken from the patient.

In the prior art, as represented by Krause, a three-dimensional model is made of a generic bone structure. Then the medical image showing the anatomical structure of the patient is projected onto the three-dimensional model, to include within the model the specific circumstances of the patient. A simulation of the operation is then carried out on the three-dimensional model.

Krause does not use the medical images directly because, due to the three-dimensional nature of the real world, the different bones, being at different depths on the patient and different patients being of different sizes, the medical images are not strictly to scale. Krause solves the problem by projecting the images onto a three-dimensional anatomical structure which is already scaled.

Examiner cites Kennet to teach including a scale in a medical image.

However this still does not teach the present invention. The skilled person understands from Krause that the direct medical images are *projected onto a three-dimensional model*. He then learns that the direct medical images may be scaled by including a scale within the image.

He would infer that he can include a scale within the direct medical images in order to *improve the process of scaling the direct medical images onto the three-dimensional model*, and then he would proceed as advised in Krause *to segment the three-dimensional model*.

Thus the skilled person would merely understand that he should use the *three-dimensional model* to simulate the orthopedic procedure.

The present embodiments however actually teach using the *scaled direct medical images themselves* to simulate the orthopedic procedure. There is no teaching in either Kennet or Krause or their combination to *segment the direct images* of the

patient's bone structure and simulate the orthopedic procedure *by rearranging these direct image segments*.

The use of the direct medical image, rather than a three-dimensional model makes the simulation much quicker and requires considerably less computing power. Furthermore it is also more accurate since the three-dimensional model is a generalization of an anatomical structure which may not be suitable for particular patients. Indeed if patients did not deviate in some way from the generalized anatomical structure they would not be requiring an orthopedic procedure.

The independent claims have been clarified in the present response to specify that *the direct medical image* of the patient's anatomy is *scaled, segmented and rearranged* to carry out the simulation of the orthopedic procedure.

The prior art fails to teach or suggest that the direct medical image of the patient's anatomy is *scaled, segmented and rearranged* to carry out the simulation of the orthopedic procedure.

All the prior art of record teaches is that direct medical images are scaled, but that a three-dimensional model is segmented and rearranged to carry out the simulation of the orthopedic procedure.

Specifically the prior art fails to suggest:

"A method of pre-operative planning for an orthopedic procedure on a patient anatomical structure, the method using a medical imaging device, the method comprising:

placing a scale next to said patient anatomical structure such that said anatomical structure can be imaged with said scale;

obtaining a direct medical image of said patient anatomical structure including said scale, using said medical imaging device;

*segmenting said direct medical image into direct medical image segments*; and

*rearranging said direct medical image segments to carry out the simulation of the orthopedic procedure.*"

In view of the above amendments and remarks it is respectfully submitted that claims 1-16, 18-39, and 41-50 are now in condition for allowance. A prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

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**Enclosure:**

- Petition for Extension (Two Months)